Application No.: 10/643,031

Office Action Dated: December 28, 2007

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A computer-readable storage medium encoded with computerexecutable instructions to perform a method of validating text content structured into a plurality of elements comprised of markup and the content, which is delimited by the mark, the method comprising:

encountering <u>as part of a depth-first traversal order for encountering the</u> <u>plurality of elements</u>, a first element of the plurality of elements;

consulting one or more validation tables to identify, from among a plurality of validation delegates, a first delegate that corresponds to said first element, the one or more validation tables not being schema that describe valid syntax or structure of said text content, the one or more validation tables including a local validation table and a global validation table;

executing said first delegate with the content of the first element to determine whether the content in the first element is valid;

encountering <u>as part of the depth-first traversal order for encountering the</u>

<u>plurality of elements</u>, a second element that is a root of a subtree of said first element;

consulting the one or more validation tables to identify, from among the

executing said second delegate with the content of the second element to determine whether the content in the second element is valid, wherein at least one of said first delegate or said second delegate determines whether the content of the element to which it is applied is valid based on at least one non-syntactic condition of the corresponding content.

2. (previously presented) The computer-readable storage medium of claim 1, further comprising:

plurality of validation delegates, a second delegate; and

prior to consulting said one or more validation tables, determining that at least one of the one or more validation tables contains no delegate that corresponds to said first element.

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3. (previously presented) The computer-readable storage medium of claim 1, wherein said act of executing said first delegate is performed prior to said act of encountering said second element, and wherein the method further comprises:

subsequent to executing said second delegate, consulting said first validation table to identify a third delegate that corresponds to said first element; and executing said third delegate with the content of said first element.

4. (previously presented) The computer-readable storage medium of claim 1, wherein said one or more validation tables include, for each element listed in said one or more validation tables, a flag indicating whether subtrees of a given element are to be traversed, and wherein the method further comprises:

determining that the flag corresponding to said first element indicates that subtrees of said first element are to be traversed.

5. (Currently amended) The computer-readable storage medium of claim 1, wherein <u>a</u> validation engine is used for validating the text content, the method further comprises comprising:

specifying a third delegate as an exclusive delegate whereby the exclusive delegate has exclusive control over validating a specific node and subtrees of the specific node and wherein the validation engine is inhibited from traversing the node and the subtrees of the specific node.

selecting, according to a criterion, a first validation table from among said one or more validation tables, the first validation table being the table that is consulted to identify delegates to be applied.

6. (Currently amended) The computer-readable storage medium of claim 1, wherein the local table is consulted prior to consulting the global table. said first delegate makes at least one decision based on an element that is nether said first element nor a subtree of said first element.

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7. (previously presented) The computer-readable storage medium of claim 1, wherein said one or more validation tables include, for each element listed in said one or more validation tables, a flag indicating whether subtrees of a given element are to be traversed, and wherein the method further comprises:

determining that the flag corresponding to said second element indicates that subtrees of said second element are not to be traversed; and

applying said second delegate to said second element and to a subtree rooted at said second element.

- 8. (previously presented) The computer-readable storage medium of claim 1, wherein said first delegate and said second delegate each comprise interpretable code.
- 9. (previously presented) The computer-readable storage medium of claim 1, wherein the method further comprises:

determining whether the text content is valid based on execution of delegates with the text content in accordance with said one or more validation tables.

10. (Currently amended) A method of validating text content structured into a plurality of elements comprised of markup and the content, which is delimited by the markup, comprising:

creating one or more validation delegates, each validation delegate being adapted to determine whether a particular type of element of the text is valid, the one or more validation delegates including an exclusive delegate having exclusive control over validating a specific node and subtrees of the specific node;

creating a first <u>local</u> validation table that specifies at <u>least one of the</u> validation delegates <u>specific to a particular class of text</u> for each type of element of the text; and

applying a validation engine to the text, wherein the validation engine, for each of the elements, consults said first <u>local</u> validation table to identify, from among the validation delegates specified by the table, a validation delegate to be executed with the element, and executes the identified validation delegate with the content of the element,

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wherein at least one of the validation delegates determines whether the content of the element with which it is executed is valid based on at least one non-syntactic condition of the content of the element.

11. (Currently amended) The method of claim 10, further comprising:

creating a second global validation table that specifies <u>validation delegates</u> that apply to a broad category of text classes, a <u>validation delegate</u> for each type of element of the text content, wherein the validation engine consults the second <u>local</u> validation table and, if there is an entry for a given type of element, executes the validation delegate specified by the <u>second local</u> validation table, and otherwise executes the validation delegate specified by the <u>first global</u> validation table.

12. (previously presented) The method of claim 10, wherein the first local validation table specifies first and second validation delegates for each type of element of the text content, and wherein the validation engine executes the first validation delegate to the element when the element is encountered, and executes the second validation delegate to the element after the first validation delegate, and the validation delegates applicable to any subtrees of the element, have been executed.

13. (Canceled)

- 14. (previously presented) The method of claim 10, wherein said text content is organized in the form of a tree, each element of the text content corresponding to a node in the tree.
- 15. (Currently amended) The method of claim 10, wherein said first local validation table specifies, for each type of element in the text content, a flag indicating whether the validation delegates for subtrees of said type of element are to be applied to said subtrees.
- 16. (original) The method of claim 10, wherein each of said validation delegates
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comprises interpretable code.

17. (original) The method of claim 10, wherein at least one of the validation delegates

comprises a null delegate.

18. (Previously Presented) A computer-readable storage medium having stored thereon a

data structure comprising:

a plurality of element names, each element name identifying an element within

text content that is structured into a plurality of elements comprised of markup and the

content, which is delimited by the markup; and

for each element name, a corresponding name of a first delegate, each first

delegate comprising code that determines whether the element that corresponds to the

element name is valid, wherein the first delegate determines whether the element that

it is called upon to validate is valid based on at least one non-syntactic condition of

the content that corresponds to that element;

for each element name, a corresponding name of a second delegate, each

second delegate comprising code that executes after the first delegate corresponding

to the element name, and any delegates corresponding to a subtree of the element that

corresponds to the element name, have been run; and

for each element name, a flag indicating whether the first delegate

corresponding to the element name is to be applied exclusively to the element

corresponding to the element name and to any subtree thereof.

19. (canceled)

20. (canceled)

21. (Currently amended) A system for validating text content that comprises a plurality of

elements that comprise markup and content, the text content being organized in the

form of a tree, the system comprising:

a computer-readable storage medium containing a first validation table

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indicating a plurality of delegates, each delegate corresponding to a name of an element in the tree, wherein at least one of the plurality of delegates is an exclusive delegate having exclusive control over validating a specific node and subtrees of the specific node; and

the computer-readable storage medium further containing a validation engine configured to traverse the tree and, for each element encountered in the traversal of the tree, consult the first validation table to identify one of the plurality of delegates that is to be executed with the encountered element, and to execute the identified delegate by invoking the delegate,

wherein at least one of the plurality of delegates determines whether the element with which it is executed is valid based on at least one non-syntactic condition.

22. (Currently amended) The system of claim 21, further comprising:

a second validation table contained in the computer-readable storage medium, the second validation table indicating a plurality of delegates, each delegate corresponding to a name of an element in the tree[[;]].

wherein the validation engine is further configured to, for each element encountered in the traversal of the tree, consult the second validation table to determine whether there is an entry for the encountered element, use the entry if the entry is present, and consult the first validation table if the second validation table contains no entry corresponding to the encountered element.

- 23. (original) The system of claim 21, wherein the first validation table identifies a post-handling delegate for at least some of the elements in the tree, the post-handling delegate being invoked after the delegate for the element, and the delegates for the element's subtrees, have been invoked.
- 24. (previously presented) The system of claim 21, wherein the first validation table indicates, for a first one of the encountered elements, that the delegate identified by the first validation table for said first one of the encountered elements is to be applied Page 7 of 15

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to a subtree rooted at said first one of the encountered elements, and wherein the validation delegate identified for said first one of the elements by said first validation table is given exclusive control over said first one of the elements and any subtree of said first one of the elements.

25. (original) The system of claim 21, wherein each of the delegates comprises interpretable code.

26. (previously presented) A computer readable storage medium storing a validation engine that performs a process, the process performed by the validation engine comprising:

traversing a structured document to visit elements of the structured document, the elements comprising markup and content that is delimited by the markup, where the markup conforms to a markup language, and where the elements are of various element types; and

checking the types of the respective elements when the validation engine visits the elements for validation and using the types to determine which executable validation delegates to execute to validate the contents of the respective elements, where the determining is performed according to mapping information that maps the executable validation delegates to corresponding element types, and where the mapping information can be modified to cause the same validation engine, without modification, to modify which executable validation delegates the validation engine selects for which corresponding element types.

- 27. (previously presented) A computer readable storage medium storing a validation engine according to claim 26, wherein the executable validation delegates validate that the content satisfies non-syntactic conditions.
- 28. (previously presented) A computer readable storage medium storing a validation engine according to claim 26, wherein the traversing is recursive and the content of at least one element is determined to be valid or not based on a delegate selected for the Page 8 of 15

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at least one element and based on another delegate selected for an element in a subtree of the at least one element.